

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims

CLAIMS

What is claimed:

1. A self lubricating, overhead conveyor system comprising:
 - a. an overhead track comprising a central support and a plurality of flanges extending from the support;
 - b. a plurality of trolley assemblies, each trolley assembly comprising a trolley bracket and a pair of trolley wheel assemblies removably secured to the bracket by a fastening means comprising a bolt and a bushing, with each trolley wheel assembly comprising a trolley wheel having a self-contained unitary ball bearing assembly comprising an inner race, an outer race, and a floor joining the inner race and the outer race to create a raceway, said inner race supported by said bushing, a plurality of balls situated in the raceway and a solid lubricating means encapsulating the balls and substantially filling the raceway, the fastening means coupling the trolley wheel assemblies to the bracket by contacting only the inner race of the ball bearing element such that the inner race is not subject to a pre-loading condition;
 - c. a conveyor chain comprising a plurality of links, with each link having a central cavity, the links joined together by a central member, the central member configured to engage the trolley bracket at a second point; and
 - d. a lubricating turn wheel assembly comprising a plurality of tooth segments engaging the conveyor chain, said tooth segments being impregnated with a lubricant and providing constant lubrication to the conveyor chain.
2. The system of claim 1 where the trolley wheel further comprises a front side, a back side and a peripheral outer surface joining the front side and the back side, the front side having a chamber defined by a partial floor and a circular side wall the chamber receiving the ball bearing assembly, the back side

containing an aperture to receive the fastening means, and the outer peripheral surface having an angle of 5-15 degrees as measured from the back side of the trolley wheel to the front side of the trolley wheel.

3. The system of claim 2 where the chamber is sealed by a cover, the cover having an aperture to receive the fastening means.
4. The system of claim 3 where the cover is sonically welded to the uppermost portion of the circular side wall of the chamber.
5. The system of claim 2 where the angle is 7 degrees.
6. The system of claim 1 where the trolley wheel is manufactured from a material selected from the group consisting of ultra-high molecular weight, polypropylene, polyethylene, polytetrafluoroethylene, and acetyl ~~Delrin~~.
7. The system of claim 6 where the trolley wheel is manufactured from an acetyl homo-polymer.
8. The system of claim 1 where the trolley wheel has a width of about 19 millimeters.
9. The system of claim 1 where the ball bearing assembly further comprises a groove in the raceway to guide the plurality of ball through the raceway.
10. The system of claim 1 where the ball bearing assembly further comprises at least one bearing cage, so that the balls do not contact one another.
11. The system of claim 1 where the balls are precision ground.
12. The system of claim 11 where the balls are manufactured from ~~ABEC-1~~ stainless steel.
13. The system of claim 1 where the lubricating means is selected from the group consisting of graphite and a graphite phenolic resin.
14. The system of claim 13 where the lubricating means is a graphite phenolic resin, and the graphite phenolic resin is added to the ball bearing assembly in liquid form and heat cured to a solid form.
15. The system of claim 14 where the graphite material is heat cured at a temperature of from about 250 degrees Fahrenheit to about 650 degrees Fahrenheit for about two hours.

16. The system of claim 13 where the lubricating means provides a barrier against entry of contaminants into the ball bearing assembly.
17. The system of claim 13 where the rotation of the balls against the lubricating means constantly provides lubrication to the balls in the ball bearing assembly.
18. The system of claim 13 where the lubricating means virtually eliminates an inertia drag and reduces a coefficient of friction associated with the rotation of the balls in the raceway.
19. The system of claim 18 where the measured inertia drag of the trolley wheel assembly is about 0.001 Vs and the measured coefficient of friction is 0.26.
20. The system of claim 1 where the fastening means comprises a bolt, a securing means adapted to engage the bolt and a bushing, the bolt further comprising a head configured to remain entirely within plane formed by the back side of the trolley wheel and the bushing further comprising a crown and a spacer portion.